THE

HORTICULTURAL REGISTER

AND

GARDENER'S MAGAZINE.

JUNE 1, 1836.

Art. I.—Mr Van Mons' *Method of Raising Fruit Trees from the Seed.* Communicated by Hon. H. A. S. Dearborn.

The name of Van Mons has become so conspicuous, that the horticulturists of every country have felt a deep solicitude to be made better acquainted with his character, and the novel means by which he has been enabled to make such immense additions to our choice varieties of fruit. Impressed with this sentiment, Mr Poiteau, one of the most distinguished writers on rural affairs in France, has lately published a very able memoir, embracing both of those interesting subjects. With that liberality which we have so repeatedly experienced, he has generously presented a copy to the Mass. Horticultural Society; and I have thought I could not perform a more acceptable act, than in furnishing a translation for the Register, that the merits of that excellent man may be better known, and his invaluable services more fully appreciated.

The theory, which had been assumed by Mr Van Mons, was original, and the principle on which it was based, could only be verified by actual experiment, which, from the peculiarity, delicacy and difficulty of the conditions, necessarily required a greater number of years for its execution, than any other which had ever been made by man. He could not call to his aid, either the exact or physical sciences; the problem which he attempted to solve, the fact which he desired to ascertain, was not to be accomplished or facilitated by mathematical calculations, the process of induction, or such tests as chemistry, the mechanical powers, or the practical arts afford; the

lights of philosophy illumined not his route; no energy of mind could precipitate, no genius hasten, no talent abridge the operation. All human power was utterly unavailable; the anticipated developements were entirely dependent upon the secret, inexplicable, slow, unaidable and long protracted process of nature. Time, and time alone could reveal the truth he so eagerly sought. Like an astronomer watching for the return of that comet, the term of whose revolution Halley had confidently predicted, he must await the undoubted phenomenon, as conclusive proof of the correctness of assumption. But in this case, besides the mere lapse of time which was to be endured, before conjecture was ripened into conviction, there was a perseverance, a constancy of purpose, and a patient industry constantly required, for a long succession of years, no portion of which could be neglected. The infinite care, labor and exact observation in collecting, planting, and cultivating an immense variety of seeds, and keeping a minute account of the characteristics of not only every generation, but of the numerous plants, of the various species of fruit in each, were all conditions of such a peculiar nature, as to demand a mind so remarkably constituted, that no adverse event, no private or public vocation should interrupt, postpone, or induce an abandonment of the experiment.

In the whole history of discoveries there is no one, who is entitled to higher commendation, for the attention and industry bestowed, as well as for that remarkable fidelity of design, devotion of purpose and indomitable perseverance, which were evinced. Alone, unaided, unpatronized, and in fact discouraged, — if it were possible to discourage such a man,—by the total absence of favor and protection, the prejudices and customs of the enlightened as well as the ignorant, and the apalling disasters he encountered, still he nobly sought to establish a theory, which if even found correct, was not of a character to produce immediate eclat, or affluence; and would require a period probably greater than was consumed in the experiment, to give general publicity to his fame. He appears, in the course of his arduous and prolonged researches, like the incarnation of wisdom awaiting, with cool, collected, and determined resolution, for the recurrence of results, which, when obtained, afforded no other compensation or honor, than the enjoyment which a great mind derives from the discovery of a new fact, or the correctness of a hazardous conjecture.

The theory and experiments of Mr Van Mons have established a most important era in the history of pomology. It has resolved a

question which, if ever even proposed, had bid defiance to all preceding ages. The comparatively small number of the varieties of each kind of fruit, were considered as the product of some other clime than that where they were commonly cultivated, or the accidental and mysterious present of fortune, in one of her sportive moods; but the success which has attended the experiments of the Belgian philosopher, has disclosed the process, by which nature accomplishes her wonderful work in the creation of new fruits, and has enabled man to avail of the secret, in such a manner, as not only to replace those which are necessarily exterminated by age, but to multiply the varieties to an illimitable extent.

After the lapse of half a century, the great merit of Mr Van Mons begins to be properly appreciated, and he has fortunately lived long enough to reap the only reward he desired, the gratitude of the world. There have been a combination of circumstances, which have had a most propitious influence, in giving notoriety to his highly commendable efforts. The rapidly increased taste for gardening and all branches of tillage, within the last thirty years, throughout western Europe and this country; the establishment of horticultural societies, and extensive nurseries; the attention which learned and eminent men have bestowed on useful and ornamental planting, and the numerous publications which have appeared for diffusing intelligence on all these subjects, seem to have been simultaneously brought in aid of the great labors of Mr Van Mons; and to render them peculiarly interesting and acceptable. He has been fortunate too, in the acquisition of such illustrious friends and colaborators, as Soulange Bodin and Poiteau, to comprehend and make known his valuable researches and precious contributions of excellent fruits. Those enlightened and generous heralds of his deeds, have rendered the name of Van Mons as familiar and dear to every intelligent cultivator of the earth, as those of a Cato, a Bacon, and a Du Hamel.

While the storm of war swept over Europe, and devastation or conquest, victory or defeat, alternately produced ruin, or advanced the prosperity of individuals and nations; while empires were reared, or monarchs dethroned, and military chieftains elevated or ruined, Van Mons steadily pursued his quiet, unobtrusive and industrious course; and whether he suffered the evils of the times, or participated in those benefits which all occasionally experience, he never for a moment neglected the great object of his life, and his memory will be cherished, when the names of many, who were blazoned to the

world, as the mighty spirits of the age, during the eventful period of his unknown existence, will be either execrated or forgotten. In the shades of rural retirement and the halls of science, he was zealously engaged in advancing the glory of his country, and the interests of the human race, while sovereigns were contending for supremacy, and statesmen to control or direct the movements of the madly excited multitude. What a grand and imposing spectacle does the life of such a man present! How dignified, how instructive, how influential the example, and how consolatory the reflections which it awakens! It is a verdant spot in the desert of the past, on which the imagination delights to dwell, where reason finds a resting place. There gush forth the fountains of intellect; there is reared the temple of the true Jupiter Ammon, — enlightened genius presiding over the terestrrial destinies of man, and announcing laws for his safe and honorable guidance, in the career of utility and happiness.

But there are unfortunately dark and odious incidents in the history of his country, and which have too often been the reproach of most nations, — neglect and ingratitude towards one of its most illustrious men and greatest benefactors. Instead of being cheered on by public countenance and approbation, he received neither direct assistance or encouragement. Even protection from outrage was not afforded him; and three times were his invaluable nurseries exterminated under the sanction of the government. Still, in defiance of all the difficulties which he was compelled to encounter, he has triumphed gloriously.

It is much to be desired, that Mr Van Mons' theory should be adopted in this country, and more especially, as his process can be commenced at the point, which he was only enabled to reach, after extending his experiments through a period of forty years. It was not, until in the fourth and fifth generations of his trees raised from the seed, that they began to yield good and excellent fruit. He was obliged to begin with seed produced by wild trees; but in this country a great number of superior fruits have sprung up, as was predicted by Poiteau, from the planting of the seeds of successive generations of natural fruits. This has arisen from the manner in which our wide spreading population has been extended, which did not allow of that attention to the selection and propagation of the best varieties of fruits, by scions and buds; and nurseries are of very modern establishment, even in the oldest and most densely inhabited portions of the union. Besides the general inability to purchase and transplant

to a great distance, valuable trees, the whole attention and labor of the pioneers of the wilderness, were required to procure the means of snbsistance; and the luxuries of an orchard and a garden could not be obtained, until the necessaries of life were first secured, and even then fruit could only be generally multiplied, like the other products of agriculture; consequently most of the trees have been raised from the seed, and having been commonly left in the natural state, their seeds have been again planted, and so on, from generation to generation, until we now find those superior kinds of fruit appear, in various parts of the United States, which Mr Van Mons produced in the fifth generation. Such are many of our most celebrated apples, plums, cherries, pears, nectarines, and especially pears. The Andrews, Bloodgood, Cushing, Dix, Gore's Heathcot, Harvard, Lewis, Prince, Seckel, Wilkinson and many others, may be classed with some of the best old, and newest European varieties.

Here then is an advanced position, from whence to commence the experiment which Mr Van Mons has so long and successfully prosecuted. Let the seeds from the fruit *borne on the parent trees* of those choice varieties be planted, and it is more than probable, all the trees thus obtained, would produce as good, and many of them superior fruits, to those of the originals; and their seeds being again planted and continued from generation to generation, the limit may be ascertained beyond which nature will not go, in the process of amelioration. At all events, taking Mr Van Mons' theory as the basis of the experiment, we have the advantage of the generations which preceeded, and may obtain results, in fifteen years, equal, if not superior to those he has only been enabled to reach in fifty years. We know not what is the generation of those extraordinary native trees. The ancestors of all the species of apples, pears, cherries, plums, and peaches which exist in a natural state, in this country, must have been generally grafted or budded trees, brought from Europe, and ten generations or more may have succeeded before they appeared in the perfection in which we now enjoy them, or not more than four or five.

If our nurserymen, and gentlemen who have a taste for horticulture, would appropriate a portion of their grounds to this special purpose, we may confidently anticipate most interesting and valuable results. Besides the additions which might thus be made to our choice fruits, it may ultimately render the care and labor of grafting and budding unnecessary; for if the seeds of such ameliorated kinds always

produce new varieties of equal or superior character, to those of the parents, it will only be requisite to collect and plant their seeds, to fill our nurseries, gardens and orchards with superb fruits, without the application of artificial means. An ample field is most certainly presented for enterprise, and when we have such conclusive evidence of the success, with which experiments may be prosecuted, there are powerful inducements to undertake them.

THEORY OF VAN MONS,

Or an Historical Account of the means which were employed by Van Mons to obtain excellent fruit from the seed.

BY A. POITEAU.

The great number of good and excellent new Pears with which Mr Van Mons has enriched Europe and North America, within the last forty years, seems to clearly prove, that the method he adopted to obtain them is superior to all others, as no one has obtained so many. Still although he never concealed his process, but published the principle with his catalogue of fruits in 1823, there has not been, within my knowledge a single nurseryman, or an amateur in France, who has attempted to practice it, either from a reliance in, or to verify the result.*

In 1833, the Royal and Central Agricultural Society of the Seine, offered a prize for good, and perfect new fruits; but the programme, which was published by the society for that purpose, did not even name Mr Van Mons's theory, or indicate any new method of arriving at the desired end, and left the competitors to the vague routine of sowing at hazard, and waiting until nature performed a miracle, in producing one good fruit among a thousand bad. Time will make known the result of the competitors, I shall therefore say nothing upon that subject at this time, but I cannot but regret, that in an age, when philosophers, chemists and physiologists are directing all their efforts to discover the process, or what is vulgarly called the secrets of nature, the Royal and Central Agricultural Society of the Seine, has not named Mr Van Mons's theory,—a theory which is now supported by so many rapeated experiments, as to place it among the number of demonstrated truths.

* I honorably except Mr Bonnet of Boulogne-sur-Mar, an enlightened pomologist, who went several times to Lovain, to examine Mr Van Mons' nurseries and who has within three years sown seeds, according to the principles of that great master.

I have said that in 1823 Mr Van Mons published in a few words, the principle of the means which he had employed to obtain good new fruits. In 1828 I gave an account of some of these means in the "*Considerations of the process which is employed by nursery men to obtain new ameliorated fruits, &c.*" published in the "*Annals of the Horticultural Society of Paris,*" Vol. III. page 288.* Now I call the principle of these means VAN MONS' THEORY, and my object is to indicate its origin, to develope it and to support it by reasons and facts, to attempt to demonstrate its solidity, to cause it to be adopted, and to present it as one of the most learned and most useful discoveries which genius and reason has made towards the close of the eighteenth century.

Mr Van Mons, could most assuredly present and explain his theory infinitely better than it is possible for me do; but fearing that his numerous occupations, and above all his modesty might prevent him, I hope, at least, to be able to give a sufficiently clear idea to excuse the audacity of writing upon this useful and important discovery of that learned and venerated professsor, and, besides, the fear I entertain that Mr Van Mons will not publish his theory, I believe I shall render an essential service to the history and chronology of fruit trees, in fixing the epoch of the origin of this history, as well as of that of those numerous good fruits for which we are in debt to him. We should at this time be very grateful to our ancestors, if they had left us a greater number of data, on the epochs and the circumstances attending the appearance of the fruits, which they have transmitted to us, and which will probably disappear in the hands of our offspring; we should have had a fixed basis to calculate their longevity, the degrees of their infirmities, and their deterioration, subjects which have now acquired great importance and which it is difficult to determine, because man does not live sufficiently long to ascertain the phases of the deterioration of fruits. Still as this deterioration, soon or late, is certain, we are very much interested, not to trust to chance, the replacing of the old fruits, in proportion as they deteriorate, by new fruits, at least as good if not better than the ancient, which we are fated successively to lose, in consequence of their great age, the feebleness of their constitution and the diseases by which they are attacked.

In this state of things we should consider the theory of Van Mons, as a very precious discovery, as it not only enriches us with new

*I translated the article and it was published in the New-England Farmer in 1829.

fruits, the greater part of which are superior to those which we possess, but gives us the certainty of being able to replace those which are inferior, or which have deteriorated, by new varieties of excellent qualities; it is applicable to the renewal of stone and seed fruits; but it is in that of Pears we have the most numerous examples of it efficacy, Mr Van Mons being more particularly attached to this kind of fruit, (without however, neglecting the others,) as superior, not merely from its qualities, but from the length of time which several of its varieties may be kept.

ORIGIN AND DEVELOPEMENT OF THE THEORY OF VAN MONS.

Mr Van Mons, a professor of chemistry at the University of Louvain in the Kingdom of Belgium, since 1817, was born in Brussels in 1765. To the most precious gifts of nature, by which he was favored, was added a good education. The study of physic, and chemistry early accustomed him to carefully examine whatever came under his observation, and to seek the cause of every effect which he saw. From the age of fifteen years, his ideas were fixed on the *natura rerum*, and since that time his meditations, his researches, and his continual experiments, far from producing a change, have but tended to confirm them. A taste for labor which he has never lost, and an ardent desire for the acquisition of knowledge, enabled him at the age of twenty years, to be received as a pharmacopalist, to write and speak all the languages of Europe, and to correspond with the learned men of all nations.

Although Mr Van Mons commenced his pomological experiments when a youth, and has not ceased to continue them, his vast capacity was not filled; he studied medicine to extend his knowledge, wrote a thesis on physiology, a subject which was much agitated at that time, and received the degree of Doctor in Paris. He was born with such strength of mind, that he wrote and now does, on the gravest subjects, in the midst of noise, in the company of persons who talke s loudly on frivolous subjects and takes a part in the conversation without stopping his pen.

Mr Van Mons enjoyed the reputation of a superior man, and the consideration due to his transcendent merit, when the revolution of 1788 burst forth. Belgium was immediately incorporated with France and Mr Van Mons was chosen a representative of the people. His great perspicacity enabled him to discover the labrynth without end, in which public affairs were involved, and he wrote a treatise on politi-

cal philosophy, in which he stated that the continuance of our dissentions was the only way in which that true and solid peace could be found, which we might in vain seek in any other manner.

It is necessary for me to recall these circumstances in relation to the youth of Mr Van Mons, to induce the reader to think, that when a man of such a temperament, establishes a theory on the regeneration of fruits, after having practised his experiments during fifty consecutive years, it will be received with much greater confidence, as it quadrates with the course of nature.

At the age of fifteen Mr Van Mons sowed, in his father's garden, the seeds of perennial flowers, roses and other shrnbs, with the design of observing the developement, the successive generations and the variations which might thus be produced. To these he soon added seeds and stones of the well known fruits, and remarked that of all his young plants, the pears were those which least resembled their parent. He searched the gardens, nurseries, markets and neighboring provinces, to confirm or rectify his first ideas, on the causes of the variation in the flowers and fruits.

At the age of 22 years the basis of his theory was fixed, and he was established as a pharmacopolist. At that time he had a gardener named Meuris, in whom he discovered a disposition for observation; he initiated him into his pomological views, and in a short time Meuris was capable of laboring with success, as well alone as with his master. In their journies they bought every where, wild and free stocks of fruit trees, which had a favorable appearance. They were so familiar with the characteristics, which the aspect, and the wood furnished, that they could purchase as well in winter as in summer. When their explorations were distant they took up the trees, which they obtained even in mid summer, and removed them immediately. By means of these acquisitions and their repeated sowings, Mr Van Mons had, in a short time, 80,000 fruit trees in his nursery, which enabled him to make his experiment on a large scale and to more promptly obtain results.

Here is an example of the rapid conceptions of Mr Van Mons. At the commencement of the French emigration, the properties of the *Rhus toxicodendron*, being so much extolled in Belgium, a leaf of this plant sold for from 6 to 7 sous at Brussels; Mr Van Mons planted cuttings in his garden for ths use of his phramacy; and going one day to see his young plants, he noticed a gardener who was pruning the trees without regard to any principle. He immediately hastened to

find Mr Villebon, who was the phenix of horticulturists at that time, and asked him what were the rules for pruning fruit trees; the reply was, "you are too old to learn them." In two years, replied Mr. Van Mons, I will teach you, in a book, which I shall publish. He then began to consult the French, English, Dutch, Russian and German works, and found that everything was to be verified and rectified. His correspondence has proved to me, that he immediately became, himself, the best book to consult, not only on pruning fruit trees, but on an infinity of operations in culture.

His repeated sowings, without interruption from parent to son, of annual flowers, and perennial shrubs which grew and fructified in a short time; his new excursions, which were longer than the preceding, to observe the wild types of our fruit trees, in places where they grew and reproduced in a state of nature; his new generations, which were obtained from wild and free or natural stocks,* as well as from the first sowings in his nursery; and his thousand upon thousand of divers observations collected from every quarter, have enabled Mr Van Mons to establish a law, which admits of fewer exceptions; this law is, that so long as plants remain in their natural situation, they do not sensibly vary, and their seeds always produce the same, but on changing their climate and territory, several among them vary, some more and others less, and when they have once departed from their natural state, they never again return to it, but are removed more and more therefrom, by successive generations, and produce, sufficiently often, distinct races, more or less durable, and that finally if these varieties are even carried back to the territory of their ancestors, they will neither represent the character of their parents, or even return to the species from whence they sprung.

Mr Van Mons has introduced wild pear trees, into the middle of his nursery, of the best perfected varieties; these wild trees, or subnatural species, as he calls them, have not varied and continued to yield poor acid fruit; the seeds of this bad fruit have been sown, and they have always produced wild trees, and although these wild trees

* I have observed in Mr Van Mon's correspondence with me, that he does not use the word *free* or *natural*, but that term with him is synonymous with *variety*. With us a tree is called *free* or *natural*, which is produced from the seed of a domesticated fruit, and in fact all trees which have not been grafted: thus we say a *free* or *natural* Rose, Camellia, Magnolia or Pear, when they are produced from the seed, cuttings or layers; and we particularly apply the epithet *wild* to Pears and Apples, which grow naturally in the woods, and whose fruit is not eatable.

flourish in the midst of the perfected varieties, the seeds of both being sowed neither produced any hybrids, from which, Mr Van Mons concludes, that there cannot be a cross fecundation between a natural species and a variety. He does not deny that the species can be mutually fecundated, or that the varieties can also be in like manner fecundated; but he maintains, that the plants which are the result, never offer an appreciable resemblance, either to the father or mother. The origin, therefore, which Linnæus has given to the *Datisca cannobina* may be considered fabulous. Besides, he does not believe that hybrids are so frequently produced, as has been alleged.

Mr Van Mons has been the first to ascertain and assert, contrary to appearances and common opinion, that double flowers are not a variation, but rather a sign of what he calls *feebleness*. This assertion, which may be considered bold for the age, has since been ranked among the number of truths from the fact, that it has been ascertained, there is less solid matter in all the supernumerary petals of a double flower, than there would have been in the seeds, if the flower had not been double.

But there is a point on which all will agree with Mr Van Mons, which is, that the varieties of the most delicate fruits, are those which are the shortest lived, all things besides being equal; and from experiments which he has made, full credence will be given to the assertion, that a scion taken from an apple grafted on a paradise stock, or from a pear grafted on a quince, does not succeed well when placed on a free stock. Experiment, in fact, proves, that if the paradise and quince render the grafts more precocious, and give a greater volume to the fruit, they impair the vigor of the tree, and abridge its life, by not furnishing sufficient nourishment; and it is easy, therefrom, to conclude, that a scion taken from such a tree, has already been impaired. From these facts, Mr Van Mons not only recommends that scions be always engrafted on free stocks, but that those individuals be selected, which appear most to resemble in vigor and physiology, the varieties which are to be engrafted upon them, — a condition very much neglected in sale nurseries. In those establishments, a subject having the appearance of a Beurre, or a D'Aremberg, there is grafted upon it a Blanquet or an Aurate, if it is found in the row destined for Blanquets and Aurates.

As I shall often have occasion to use the words *degeneracy* and *deterioration*, or their derivatives, it seems necessary that I should here fix the sense in which I employ them. Degeneracy, in

culture, is applied to the seeds of fruits and flowers, which have been improved by variation. Seeds degenerate, or have degenerated, when the plants which are produced from them, no longer present certain qualities, which are found in their predecessors, — qualities which they have acquired by variation. Philosophically, this is not a real degeneracy, but, on the contrary, a quality, a return towards the state of nature. As civilians, we say, that a man degenerates, if he abandons the social state, and the advantages, whether real or not, which he has acquired, at the expense of his liberty, and goes to enjoy his independence, and all his liberty, far from the chains of society, while philosophy says that this man resumes his rights, and re-enters into a state of perfect nature.

Deterioration, in pomology, applies to fruit trees and their fruits; a tree is deteriorated by age, disease, a poor soil, bad culture, an unfavorable exposure, the weather and adverse seasons, &c.; fruits are deteriorated by the same causes, except the old age of the tree which bears them, which old age, when it is not too far advanced, generally improves them.

The degeneration of the seeds of fruit trees in a state of variation, being the pivot of the theory of Van Mons, it is necessary that it should be clearly presented.

As long as plants in a state of nature remain in their natal soil, they produce, during their whole life, seeds which do not degenerate. Seeds taken from a Baobab that was two thousand years old, produced trees like itself, quite as well as those which it had borne at the age of twenty years. Wild pear trees, in a state of nature, and in their native soils, always reproduce seeds, without any sensible variation. It is not the same with plants born in the state of variation, either in consequence of having changed the climate, the territory, or from some other unknown cause. The seeds which a domesticated pear, — that is to say, one which has been for a long time in a state of variation, — yields at its hundredth frutification, produces trees not only very different from itself in consequence of its being only a variety,— and the bounds of variation are not known in descending from parent to son,—but still very different from the trees which have been produced from the seed of its first fructification; and the older a domesticated pear becomes, the nearer do the trees produced from its latest seeds, approach to a state of nature, without, nevertheless, being able ever to return to it, as Mr Van Mons affirms.

Now let us examine how the annual culinary and ornamental plants

are governed, which have been for a long time in a state of variation. The seeds are annually sown, and whatever be the variation, which the new generation undergoes, it preserves the principal characteristics of its parent, and scarcely an individual is discovered, which exhibits a tendency to return to a state of nature. When beautiful balsams, and excellent lettuces are once obtained, they are easily preserved as such, and their variation seems, sufficiently often, rather an effort to become more beautiful, than a disposition to return to the wild state of their ancestors.

From these two extreme facts, and an infinite number of others which are intermediary, Mr Van Mons has arrived at this conclusion: that as the seeds of the first fructification of an annual plant, in a state of variation, produces plants, which may vary without removing far from the state of their parent, while on the contrary the seeds which are yielded by the hundredth fructification of a domesticated pear of excellent quality, or for a long time in a state of variation, produce a great variety of trees, which neither resemble their parent, and whose fruits almost always detestable, are more or less near to a wild state; this difference should have its cause in an unfavorable modification, — *in a degeneracy which the seed of the pear undergoes in consequence of the age of the variety which bore it.*

Having arrived at this conviction, Mr Van Mons has said: by sowing the first seeds of a new variety of fruit tree, there should be obtained trees always variable in their seeds, because they can no longer escape from this condition, and which are less disposed to return toward a wild state, than those produced from seeds of an ancient variety; and as those which tend toward a wild state have a less chance of becoming perfect, according to our tastes, than those which are in the open field of variation, it is in the seminary of the first seeds of the newest varieties of fruit trees, that we should expect to find more perfect fruits according to our tastes.

The whole theory of Van Mons is contained in the above paragraph; it was to verify it, and put it in practice, that from that period he collected in his nursery young wild trees, young free stocks, and sowed large quantities of the seeds and stones of various kinds of fruit trees, in order to have their first fruits, and to sow their seeds in turn to obtain a generation, of whose novelty he was sure, and to take it as a point of departure for his experiments. Although Mr Van Mons operated on thousands of various kinds and different varieties of trees at the same time, I will assume, in order to render what I say

more clear, in explaining his progress, that he made his experiments on a single variety of pear.

As soon as the young pear tree with which he began his experiments, produced its first fruit, Mr Van Mons sowed the seeds. There resulted a first generation, the individuals of which, although of very different kinds, did not resemble their parent. He cultivated them with care, and endeavored to hasten their growth, as much as possible, by all the known means in his power. These young trees yielded fruit, which were generally small, and almost all of them bad. He sowed the seed of these and obtained a second generation without interruption — which is very important, — that were very different in kind, but did not resemble their parent, although they had a less wild appearance than their predecessors. These were cultivated with equal attention, and they fructified earlier than had their parent. The fruits of this second generation, also varied as much as the trees which bore them, but part of them appeared less near the wild state than the preceding; yet only a few possessed the requisite qualities to entitle them to preservation. Constant in his plan, Mr Van Mons sowed the seeds and obtained a third continued generation, the greater part of the young trees of which, had a *phasis* of good augury, that is something of the physiognomy of our good domesticated pear trees, and they were consequently less various in appearance. Being carefully cultivated, as had been the preceding, these trees of the third generation, fructified still earlier than had those of the second generation. Several of them produced edible fruit, although not yet decidedly good, but sufficiently ameliorated to convince Mr Van Mons that he had discovered the true path of amelioration, and that he should continue to follow it. He also recognised, with not less satisfaction, that the oftener the generations succeeded each other, without interruption, from parent to son, the more promptly did they fructify. The seeds of the fruits of this third generation, which had a good appearance, were sowed, and the trees managed as carefully as the preceding, and produced a fourth generation, the trees of which were a little less varied, and nearly all of them had an appearance of favorable augury; they fructified in a shorter time than the third generation; many of the fruits were good, several excellent, but a small number still bad. Mr Van Mons took the seeds of the best kinds of these pears, sowed them and obtained a fifth generation, the trees of which were less various than the preceding, fructified sooner, and produced more good and excellent fruits, than those of the fourth.

It was after the result of this fifth generation, from parent to son, that Mr Van Mons made known the process which I have explained. Although having arrived at a most happy conclusion, and where others in his situation would have stopped, I know that he continued his experiments to 1834, and that he now does, and has reached the eighth generation, without interruption from parent to son, and that at each remove he always obtains fruits more and more perfect.

Mr Van Mons made the same experiment upon almost all the other kinds of fruits. The apple yielded no other than good fruit in the fourth generation. The stone fruits, as the peach, apricot, plum, and cherry, became perfect in a still shorter time; all of them produced good and excellent fruits in the third generation; which should be the case, for our stone fruits always reproduce more or less good without any particular attention, and therefore they should with less difficulty and in a shorter time, arrive at a perfect state of amelioration.

After having presented in a succinct, but I hope a clear manner, the theory of Mr Van Mons, and the means which he employed to put it in practice, it is proper that I should say a word as to the time which is required to obtain good fruit, in order that any one who wishes to verify or adopt it, can proceed according to his principles.

The first thing which preoccupied the attention and excited the anxiety of Mr Van Mons, in the commencement of his experiments, was to ascertain how many years it required to arrive at the result which he sought to obtain; how many generations would be necessary, and how many years each generation would require to produce its first fruit. This first consideration, appalling to ordinary men, did not arrest Mr Van Mons in his course. He put his hand to the work, and learned that three or four generations, without interruption, from parent to son, and from twelve to fifteen consecutive years, were sufficient to obtain no other than excellent fruit from the stones of peaches, apricots, plums and cherries: that to obtain no other than excellent apples, only four successive and uninterrupted generations, from parent to son, and about twenty consecutive years, were required. As to the pear, the difficulty was greater, but not insurmountable, as we shall see. At first, Mr Van Mons was unable to procure the seeds of varieties very recently procreated; the seeds which he was obliged to use to commence his experiments with, were obtained from ancient varieties, whose age, although uncertain, was much advanced, which from experience tended to retard the first fructification of his young

trees. Nevertheless, Mr Van Mons has been able to ascertain that twelve or fifteen years was the mean term of time which evolved from the moment of planting the first seed of an ancient variety of the domesticated pear, to the first fructification of the trees which sprang from them.

The trees from the second sowing of the seed of the first generation, have yielded their first fruit at the age of from ten to twelve years, as the mean term; those of the third generation, at the age of from eight to ten years; those of the fourth generation, at the age of from six to eight years; and finally, those of the fifth generation, at the age of six years. Mr Van Mons being actually at the eighth generation, has informed me that he has obtained several pear trees which fructified at the age of four years.

From this decreasing progression, it may be seen that the fear of a lengthened experiment ought to decrease in proportion as it advances, and that adding the requisite years in the first five generations of the pear, a point is reached where none other than good and excellent pears are obtained, at the end of fortytwo years. But if in each generation, as has been shown, there are always several trees which do not await the mean term named for their fructification, the time may be estimated at thirtysix years for obtaining from the pear, in five uninterrupted generations from parent to son, new trees and fruits, all of which are of excellent quality. The time can still be more abridged; for in one of his last letters, Mr Van Mons informs me that from two of his first sowings of pears, there were trees produced which fructified at the age of six years.

I have collected much of what I have stated, and what I have yet to relate, in the nurseries of Mr Van Mons, at Louvain; but it is from the correspondence of that venerated professor, that I have obtained the groundwork of my discourse; and as that correspondence had for its object my sole instruction, and not that of guiding me in a compilation which I had not contemplated, it follows that what I have still to communicate has not that natural connexion which I desired it should have assumed, and will consequently appear, to a certain extent, as detached articles.

When Mr Van Mons commenced raising trees from the seed, he had already seen in other nurseries, that the seed of the varieties of the pear genus reproduced neither the characteristics of the tree, nor those of the fruit from which they sprang; therefore, he was not restrained, as may be said, to *raise by species*. But he had gone

farther and ascertained that the ten seeds of a pear produced ten different trees, and ten different fruits. Still his manner of sowing is very near that of all nurserymen. He left his plants in the seed bed two years; he then took them up, and part of them he threw away as worthless, and transplanted the most vigorous at such a distance one from the other, that they could thoroughly develope themselves and fructify. He considered it best to plant them sufficiently near, in order to force them to run up tall, and to form pyramidal tops, without pruning; this hastens, he states, their fructification. I have seen squares of pear trees in his nursery at Louvain, at the epoch of their first fructification, and they appeared to be about ten feet apart. While waiting for the young trees thus planted to fructify, there is afforded an opportunity of studying their form and physiognomy, and to establish the prognostics of what they may become, from their different exterior characteristics.

Mr Van Mons has ascertained that it is scarcely before the age of four years that young pear trees develope their characteristics; and that before this age, it is rarely possible to presume what each individual may become. It is not until the second or third year after the seedlings have been transplanted, that Mr Van Mons begins to examine them for the purpose of ascertaining the prognostics of each individual. In the commencement of his experiments, it was sufficiently easy for him to recognise as good auguries in those young trees, which showed from their form, wood and leaves, a resemblance to our good ancient varieties. But as he obtained a great number of excellent new fruits, which presented new characteristics, sometimes analagous and sometimes opposed to those of our good old varieties, it was much more difficult to establish the data for ascertaining what the young trees raised from the seed may become; for he obtained excellent fruit from trees of a very bad appearance. Still from long continued observations, he has established the following prognostics:

1. *Prognostics of favorable augury.* A good form, a smooth and slightly shining bark, a regular distribution of the branches, in proportion to the height of the tree; annual shoots bent, striated, a little twisted, and breaking clean without splinters, thorns long, garnished with eyes or buds, their whole, or nearly whole length; eyes or buds plump, not divergent, red, or grizzled; leaves smooth, of a mean size, crimped on the sides of the middle nerve, borne on petioles rather long than short, the youngest, in spring, remaining a long time directly against the bud, the others, or the inferior, ex-

panded, hollowed into a gutter from the bottom towards the top, but not their whole length.

2. *Prognostics of bad augury.* Branches and twigs confused, protruding like those of the horn-beam, or broom; thorns short, without eyes; leaves averted from the bud, from their first appearing, small, round, terminating in a short point, guttered their whole length. These characteristics indicate small fruit, flesh sweet and dry, or baking fruit and late.

3. *Prognostics of early fruit.* Wood large, short; buds large and near.

4. *Prognostics of late fruit.* Wood slim, branches well distributed, pendent, the shoots a little knotted, generally denote late delicious fruit; with leaves round, point short, stiff, of a deep green, borne on petioles of mean length, are analogous signs, but less sure.

I wish much, that Mr Van Mons had indicated, by what sign we could determine, when a young pear tree promised large fruit, but he has been silent upon this subject, whilst he has given, as the characteristic of good augury, an annual twig, which breaks cleanly and without splinters.

I have stated that Mr Van Mons does not agree in opinion with those, who attribute the deterioration of fruit trees to their multiplication by repeated ingrafting; now I recollect that Mr Knight has written, that if the parent tree of an ancient variety is found, it can be regenerated, by taking scions from it. This expresses with sufficient clearness that Mr Knight, the most learned pomologist in England, thinks fruit trees of free stocks, or natural trees, deteriorate much less rapidly than those multiplied by grafting, which accords with the opinion of Mr De Murinais, and Mr Bonnet. Mr Van Mons, on the contrary, maintains, that free stocks or natural and grafted trees, deteriorate in the same manner and with the same rapidity, in consequence merely of their age; and that it is age alone which causes our fruit trees to deteriorate, and their seeds to degenerate. The following is an example in support of his theory. In the course of his pomological experiments he discovered in an old garden of the Capuchines, the parent tree of our Bergamote de la Pentecote, which is at this time a sufficiently old pear, and all the trees grafted from it, are affected with canker in slightly moist land, and the fruit is small, cracks when growing in the open air, is covered with black spots, which communicate a bitter taste to the flesh, and finally it no longer succeeds, but when trained as an espalier,

along a wall. Very well, the parent tree of this Bergamote, was infected with all the evils which are found in those grafted from the same variety; Mr Van Mons detatched rooted suckers or sprouts, and at the same time took scions which he grafted on other stocks, and the trees produced from both, were neither more or less deteriorated, than those of our gardens, which have been for a long time, multiplied by the graft. Therefore, it is age only, to which should be attributed the natural and gradual deterioration of our varieties of fruit trees, as well as the equally gradual degeneracy of their seeds. I say natural and gradual deterioration, for Mr Van Mons is not ignorant that there are certain morbific traits, which are communicated from the stock to the graft, and from the graft to the stock.

The subject of deterioration naturally leads to the inquiry how many years a variety of pear may live. Mr Van Mons estimates that it may live from two to three hundred years, and that if at this age it is not extinct, its fruit is so deteriorated, that it no longer merits being cultivated; consequently he does not believe in the antiquity of fruits which, it is said, have been transmitted to us from the Romans.

Mr Knight is of opinion, the deterioration is still more rapid, and assigns a shorter term to the existence of our varieties of fruit trees. This author even asserts, that it is not long since our old fruits were still better than they now are. But it is doubtful whether Mr Knight can furnish the proof.

The thorns, with which the greater part of young free pear stocks are covered, disappear with age; but the tree can reproduce them in an advanced age, if a sprout is developed on the trunk, or if its vigor is augmented. Thus have I seen, in Mr Van Mons' garden, pear trees renew their thorns, after having ceased to produce them. In Paris it is only necessary to head down a large orange tree, without thorns, to see it throw out new branches covered with them.

There are free stocks of old varieties of pears, which have the power of causing the fruits which are engrafted upon them, to grow to an extraordinary size, — double, says Mr Van Mons. It is a quality which the free stocks of new varieties do not possess, and which Mr Van Mons cannot explain. In fact we often see trees which constantly yield fruit larger than others of the same variety, all things, in other respects, being equal. An inverse appearance, is often presented, to the florists of Paris; there are lemon trees, whose stocks become diseased, and cause the oranges which have been budded upon them to perish, in four or five years.

When the young pear trees, procreated from parent to son by uninterrupted generations, begin to produce edible fruit, they are generally summer fruits. It is necessary that the uninterrupted generations be more numerous, to obtain winter fruits, or such as keep long.

In proportion as the uninterrupted generations are multiplied from parent to son, the great differences which are first observed between the trees and their fruit, diminish in an inverse progression; wild forms, or appearances are no longer seen; all of them have an air of civilization, and their fruits no longer deviate from good. In the last package of fruit which Mr Van Mons sent me, a considerable number of the pears naturally take rank among our Beurres and Doyennes in form, volume and quality, and all these fruits to the number of sixty varieties, were the first of a sixth generation, without interruption from parent to son.

Mr Van Mons remarks, that among the new pears, he has obtained, there are some which were several years in taking a fixed form; that several did not assume one, for from twelve to fifteen years, and that others never did. Our old varieties, without doubt, have been in the same situation, and he gives as an example of pears, which have never assumed a determinate form, our Bon Chretien D'Hiver; still it is a pear the most easily recognised, notwithstanding the variation of its form and size.

Mr Van Mons considers it an invariable principle, that a graft does not bloom sooner than the parent stock from which it was taken. Nevertheless, a contrary opinion universally prevails among nurserymen. They often graft scions taken from young trees, in the hope of hastening their floration, and sometimes succeed; but, in this case it may be said, that the scion taken was predisposed to bloom, and that it would equally as soon have done so, if it had remained on the parent tree. It is the same with regard to buds. The first *Astrapœa pendula*, which bloomed in France, was a bud taken from a stock in the Garden of Plants, which did not begin to bloom, until several years after. Finally, there are so many accidental causes, which advance or retard the floration of grafts and their parent stocks, that it is difficult to ascertain whether they should bloom simultaneously, or one after the other, while numerous facts attest, that the multiplication, repeated by bud, accelerates the floration and diminishes the volume, in a great number of species.

Mr Van Mons has ascertained, that it is advantageous to collect the fruit a little before it is fully ripe, from which it is desirable to

obtain seed for planting, and to leave it to become perfectly mellow, and reach a state of decay, before extracting the seeds or stones. He admits, with Mr Knight, that the apple deteriorates less rapidly, and lives longer, than the pear. This cannot be doubted, when we compare the facility of rearing apple trees in almost any kind of soil, with the difficulty of finding one, which is suitable for the pear.

The learned professor much prefers the White Thorn, *Mespilus oxyacantha*, to the quince, as a stock for grafting our ancient varieties of pears upon. Pears grafted on a thorn, he says, grow higher, have a more perfect pyramidal form, and produce their fruit nearer the trunk. I agree entirely in opinion with Mr Van Mons; first, because the pear takes perfectly on the thorn, which is an indigenous tree, rustic, not difficult to cultivate, and of easy multiplication from the seeds; and secondly, because complaints begin to be made of the quince, not only on account of its three varieties giving different results, but in consequence of its being deteriorated by its extended multiplication by suckers and cuttings; and because it does not succeed well, in all kinds of land. As to the choice of the best variety, an error, committed in this respect, in the nursery of Luxembourg, has excited great complaints on the part of those who have obtained pear trees from that establishment, which has proved for the thousandth time, that the quince tree of malformed fruit, is not so good for stocks, as that which yields pyramidal fruit. As to the superiority of the white thorn over the quince, it is a question which will soon be settled with us; for when the Horticultural Society of Paris received the collection of pear scions, which was sent by Mr Van Mons in the spring of 1834, there were not a sufficient number of quince stocks, at command, for all of them, and Count De Murinais caused a portion of them to be placed on the thorn: they have taken perfectly well, grown admirably, and give the most favorable indications of a fortunate result.

From the data which Mr Van Mons has given, we are induced to think, that the pears which do not succeed with us, unless trained as espaliers, against a wall, have not always required that favorable position, — that they are now irreclaimable, on account of the weakness of old age, the deterioration which they have sustained, and the decrepitude which threatens them, and that finally, a time will arrive, when in spite of our cares, they will no longer be good even as espaliers, and will be abandoned and become extinct. To illustrate the principle of that able pomologist on this subject, I will add, that when

a variety is enfeebled by age, or its temperament exhausted, it is best to graft it on a quince, in order that it may receive only a moderate nourishment, and should never be put on a free stock, whose too copious supply of aliment would hasten its destruction.

Mr Van Mons has remarked, that the new varieties of pears which he obtained by repeatedly planting the seed from generation to generation, without interruption from parent to son, neither possessed the rusticity or the longevity of old varieties, and that those whose fruit was the best, were also those which indicated the shortest term of longevity. All this is in conformity to the course of nature, and it is proper that we submit to it. Mr Van Mons has given the explanation of this fact. When there is no interruption between the generations of our varieties of fruit trees, nature cannot reclaim her rights; she has not time to modify the seed according to her manner, to make them resume a part of their old wild character; but if a space of fifty years is left between two generations, the individuals of the second, bear the marks of rusticity, and a tendency towards the wild state, which nature had developed in the seeds of their parent during those fifty years. This in fact, happens, when the seeds of an old variety of a fruit tree are sown.

Here I am bound to attempt to present the opinion of Mr Van Mons without alteration, and to add thereto my reflections, and some adverse views whether well or ill established; but finally it is time that I leave him to speak for himself and express in his own cogent style, his manner of observing the progress of deterioration and decrepitude in our varieties of fruit trees.

"I have remarked," he says, "that the most excellent beyond all others, least resist the ravages of old age, and become sooner old than the varieties whose birth preceded them; they cannot attain an age of half a century, without manifesting symptoms of decrepitude. The first of these symptons, is that of bearing less constantly and the fruit ripening later. The decay of the wood, the loss of the beautiful form of the tree, and the alteration of the fruit follows at much later periods. The varieties which have existed but half a century do not suffer from the canker at the ends of the branches, nor from diseases of the bark; the fruit does not crack, is not filled with a hard substance, covered with knots nor insipid or dry; the alternates, are but a year; these varieties can still be grafted on other trees, without their infirmities being augmented. It requires half a century more to end their sufferings, and the

general destruction of the varieties is the only remedy which can be applied to its diseases. It is painful to think, that soon the Saint Germain, the Beurre Gris, the Crassanne, the Colmar and the Doyenne [St Michaels] must submit to this destruction. None of these varieties any longer succeed with us [in Belgium] except when engrafted on the thorn and as espaliers; but this success is at the expense of their commendable qualities. During my youth these varieties in my father's garden, presented superb trees, in good health, and rarely was there any imperfection in their fruit. *O quantum distans ab illis!* What a loss in a time so short — in the space of sixty years! I repeat, the advantage of youthful variation, is being without any imperfections."

I ask permission of Mr Van Mons to doubt, a little, such an alarming rapidity in the enfeeblement of our varieties of Pears. I well know that almost all those, with which I have been acquainted for fifty years, are affected with different maladies; that in passing through the nurseries, trees are seen, which have been grafted from our fine pears, in the bark of stocks the of which, are numerous defects; the branches are cankered, the extremities of the young twigs are black and they lose their leaves before the natural epoch,— all diseases, which Count Lelieur places among the number of those that are incurable; but the author, although very particular, has nevertheless, found here and there trees upon which he did not discover any disease, and which he allowed the gardener of the Emperor to introduce into the gardens of the Crown. I am well persuaded, that our varieties of fruit trees, considering their origin, cannot have the tenacity, the indefinite life of the natural species; but I also believe that there are imperfections, individual maladies, which do not equally attack the whole variety; that the variety, for example, we call Beurre Gris, which is in a state of decrepitude, is extinct in some places, while it still exists in others. Mr Van Mons himself affirms it, in saying, that in Belgium, there are varieties, which no longer succeed, except as espaliers trained against a wall; and finally, I believe that, if scions had always been taken from the most healthy individuals to perpetuate the varieties, we should not have seen so many trees affected with diseases, which abridge their existence and which also contribute, for the same reason, to shorten that of the whole variety. If now then, it is adopted as a principle, never to take scions but from young and healthy trees, and to insert them only on vigorous free

stocks, the varieties will be longer preserved in a healthy state, than is the case at the present time.

Still, whether the deterioration of our fruit trees, be naturally slow as I think, or rapid, as Mr Van Mons and Mr Knight have asserted, it is not less certain, and it is well to think of some method for replacing them. Our manner of sowing the seeds and trusting to chance, for obtaining a good new fruit, is not certainly the best, as experience has sufficiently proved. Besides, chance does not merit the confidence of a reasonable man, especially when the probabilities are adverse. It is necessary then to have recourse to science, which is founded on reasons deduced from particular facts, and from whence flows that which is called a principle; and when this principle agrees with the course of nature, and is not contrary to any known fact, it seems to me, that it should be adopted as a truth, and be employed with confidence.

Such is, in my estimation, the theory of Mr Van Mons, and it is to be considered as the best and most prompt means of regenerating our fruit trees, that is to say, of replacing the old deteriorated varieties by new varieties, which are perfectly healthy and bear excellent fruit. I have presented, as clearly as was in my power, the process employed to put it in practice, to induce the friends of our country to naturalize it; and in order to inspire more confidence, I have dared to say a word on the transcendent merit of its author, for which I ask a thousand pardons of his modesty.

I might yet add to this corollary many remarks, made by Mr Van Mons on fruit trees and their culture, for his correspondence is very copious in facts; but I believe I have said sufficient to support the theory of this learned professor. I therefore, hasten to complete my memoir, by fixing the epoch of the removal of his nursery from Brussels to Louvain, and giving an idea of the incredible obstacles which he was obliged to encounter, in his pomological career, instead of the encouragements which were due to him, and shall finish, by a description of some of the excellent fruits obtained by Mr Van Mons, and few or none of which are yet known in France.

After Mr Van Mons had been a distinguished professor of physic and chemistry for seven years in the central school of the department of Dyle, and after the fortunes of war had separated Belgium from France, King William rendered justice to his merit, by naming him professor of the same subjects in the University of Louvain, in 1817, six months even before that University was re-established. Louvain

being only about six leagues distant from Brussels, Mr Van Mons could at the same time perform his duty as professor, superintend his nursery, and pursue his experiments. He was then at the apogee of his pomological career; he had more than 80,000 trees in his *Pepiniere de la Fidelite* [Nursery of Fidelity] the greater part of which were pears raised from the seed; several compartments were in their fourth, fifth, and sixth generations without interruption, from parent to son, and produced delicious fruits. He had for several years sent scions to Germany, England and the United States of America; nevertheless, except his friend Bosc, Mr Vilmorin, Mr Leon Leileric and Mr Bonnet, there was scarcely an individual in Francé, who knew that Mr Van Mons existed; such is the empire which routine and apathy has among us. The English and American catalogues are filled with Mr Van Mons' fruit; and it was not until 1834 that we find a few of them described, in the new edition of Mr Noisette's *Jardin Fruitier*.

To decide upon the character of these new fruits, Mr Van Mons assembled three or four friends who were superior judges; they tasted them, wrote down the qualities of each, and Mr Van Mons preserved only the trees that produced fruit which was decided to be good and very good; the same proof was repeated two, three, and four times in succession, and it was not until after these repeated trials, that he decided to take grafts from the trees which bore them. On this subject, I should here make a few remarks, to dissipate the doubt which some persons still entertain, on the care which Mr Van Mons took to propagate only excellent fruits. In the first place, it should be observed that every year is not favorable to the perfect developement of the good qualities of fruit, and that if a fruit generally delicious, is tasted for the first time, in an unfavorable year, an inferior quality may be discovered. It was thus that in 1833 I did not find in several samples of *Poiteau's pear* those excellent qualities, which Mr Van Mons had recognised during four successive years, and which had determined this learned man, from motives of friendship, to honor me by affixing to it my name. In the second place, it was always impossible for Mr Van Mons to collect the scions himself, as he was too much occupied, which explains why it sometimes has happened, that an indifferent variety has been received, instead of a kind worthy of propagation. It was evidently from an error of this kind, that Mr Vilmorin received, under the name of Beurre Fourcroy, a Pear tree of a very late kind, the fruit of which had no merit; for Mr Van Mons had tasted the Beurre

Fourcroy several years in succession, and had found it worthy of being dedicated to that most learned chemist, who had accepted the dedication, a little time before his death.

Mr Van Mons fully enjoyed the result of his long continued experiments; he was happy in diffusing with real disinterestedness, and the greatest complacence, his new fruits, the greater part of which were superior to those with which we are acquainted, when in 1819, *ex abrupto*, the land on which his nursery of *Fidelity* was located was decided to be indispensable for streets and building lots, and he was summoned to vacate it in the short space of two months, under the penalty of seeing all his trees cut down and thrown into the fire. Such an injunction would have been fatal to many persons, other than such a man as Mr Van Mons; he was sensibly affected, but not frustrated; his noble character, his profound knowledge of men enabled him to surmount this reverse of fortune, and disposed him calmly to seek elsewhere, another place for his establishment. As professor in the University of Louvain, he resolved to transport his nursury to that city, that he might have it under his management, without leaving the University; but the period assigned for evacuating the land was unfortunately, that of mid-winter,—from the first of November to the last of December. Mr Van Mons had at his disposal, only a part of Saturday and Sunday in each week, when he could go to Brussels; to collect the scions, to mark the most precious trees and give the requisite orders for the others, was all that he could do himself: and another garden as extensive as that which he evacuated, was required for the reception of his trees. His loss was consequently great and irreparable, from the unfortunate position in which he was placed, being obliged to confide nearly the whole of the care and labor of removal, to persons not well qualified, and who were incapable of comprehending the deep interest which he felt for the preservation of his trees. It was with great difficulty that he saved a twentieth part of his nursery, and this twentieth consisted only of scions for grafting. The remainder were sold or given to whoever would take them. After such a catastrophe Mr Van Mons considered it necessary to guard against being ever again exposed to such a calamity. But incapable of distrust, he hired a piece of land in Louvain, which unfortunately belonged to the city, as a receptacle for the ruins of his nursery at Brussels, and continued his sowings and experiments.

Except, having a great number of young plants broken down and drawn out of the ground, by the masses of ice which were left on the

ground for several days, after a great freshet in the river which passes through Louvain, occasioned by an unusual thaw in 1830, and which overflowed his nursery to the depth of seven or eight feet; if, I say, we except this flood, Mr Van Mons enjoyed more or less quietly his new location, during thirteen consecutive years. His correspondence was renewed and extended, his losses were replaced by new acquisitions, the mass of his observations were augmented, and he continued to introduce into his nursery good new fruits, obtained by other amateurs, such as Messrs Coloma, Capiaumont, D'Hardenpont, the Abbe Duquesne, Gossart, Wirthum, Delneufcourt, Diel, Liart, Knight, and an hundred others, and he distributed scions of these good fruits simultaneously, with those of his own; for his sole end has always been to multiply those which were good, and to enable the whole world to enjoy them. But he never sacrificed any trees raised from the seeds, to receive the scions which were sent to him from all quarters—even from North America, before the character of its fruit had been decided: he therefore annually purchased stocks for the reception of the grafts, which were sent to him and for preserving his own varieties, that he might more liberally disseminate them. For this purpose, he adopted in his nursery at Brussels, a kind of grafting which he calls *graft by copulation*, and he continues to practise it at Louvain with great success. An engraving and description of this mode of engrafting is given at the beginning of this article.

Until 1823 Mr Van Mons had not distributed any of his trees or scions, without numbers being attached to them, which corresponded with similar numbers affixed to the parent-stocks in his nursery, that enabled him to answer all the queries which might be addressed to him, by the persons to whom he sent scions. At this period, having been confined to his bed by a severe wound, he compiled from his registers and published a catalogue, in which we find about 2000 varieties of fruits, in which the names are placed opposite the numbers of those from which scions had been taken and distributed, makes known the principle of his theory, describes some of the details of his culture and his manner of making experiments: there are also in it some remarks on the causes which compelled him to abandon his nursery at Brussels. There are several things worthy of attention in this catalogue; firrt, the interruptions in the series of numbers; for example, in the second series we find number 850 immediately after 840, which indicates that nine intermediate numbers were attached to nine trees of favorable augury, but whose fruit had not yet been decided

upon as to quality: second, the names followed by the words *by us* naturally indicate that the varieties thus designated have been produced from the seeds by Van Mons; third, when the name is followed by the words *by its patron*, they indicate that the name of the variety is that of the person who has obtained it from the seed. But there is one very important thing which Mr Van Mons did not think of, and which would have been very useful in the history of fruit trees, especially to ascertain the course and progress of their deterioration, this was, to have fixed the year of the birth of each of the new varieties, designated in his catalogue. Mr Van Mons was alone capable of doing it: when I spoke to him about it, he replied that his intention had not been to establish a science, but rather to do a good act, which would be immediately useful by the dissemination of good fruits; still he regrets having left this hiatus, which his notes do not now enable him entirely to fill up.

As I have before stated, Mr Van Mons enjoyed his fifty years of experiments, in enriching us with good excellent fruits; but *public utility* had sworn that she would finally embitter his old age. In 1831 we besieged the citadel D'Anvers, and although Mr Van Mons nursery was fourteen leagues distant from the army, the engineers could not find a more commodious place than that nursery, to bake the bread of the soldiers in; consequently a great part of Mr Van Mons's trees were destroyed, having constructed their ovens on the ground where they grew, and the fruit of the others was exposed to pillage. Still the philosophy of Mr Van Mons sustained him in this unexpected devastation; he hired two other tracts of land, into which he removed his young plants of the seventh, eighth and ninth uninterrupted generation, from parent to son; he was consoled because he had time to collect, although it was in the summer, scions of the trees which were sacrificed to afford a place for the erection of ovens; but *public utility* had not yet exhausted all her severities against him. Unfortunately there was not a Chaptal in the council of the prince, and the engineer, seeing nothing, decided again in 1834, in the name of *public utility*, that Mr Van Mons' nursery was the sole and only point on the globe, proper for the establishment of a gas-house for lighting the city. Heaven grant that these gentlemen may be enabled to see better for the future; but it is not in their power to prevent the true friends of intellectual light, and of public prosperity, from regarding their decision as an act of ignorance and the grossest vandalism.

Mr Van Mons is actually seventy years of age; he has consecrated

his whole, all his life, a larger part of his fortune to public utility, and yet it is the name of *public utility*, that they have slain him, assassinated him! O age of light, how dark thou art!

In the commencement of September 1834, Mr Van Mons, on sending me a box of pears which were the first of a seventh generation, observed in his letter, "when you taste these Pears, the trees which bore them will no longer exist." In fact, I learned a few days after, that the destructive axe had prostrated these trees and many others, that the nursery was dishonored, lost, and Mr Van Mons frustrated in his dearest hopes, which were to send us the products of his labor.

It is impossible to foresee, or rather I dare not express my fears as to what will become of the ruins of an establishment, which wanted encouragement, which was of a nature to elevate the glory of an empire.*

NOTE BY MR POITEAU.

Count Lelieur of Ville-sur Ance, believes with Mr Murinais and Mr Bonnet, that the stock has an influence on the seeds of the graft. During his residence in North America, he saw in the environs of New York a red and a white peach which perpetuated their stone without variation; but when he had budded the red on the white and the white on the red, they neither produced fruit perfectly red, or perfectly white, the two colors were mingled.

GRAFTING BY COPULATION, AS PRACTISED BY MR VAN MONS.

Mr Van Mons has always practised this mode of grafting in his nursery, preferring it to all others, as its results are very satisfactory. He has practised it in his house before the fire, with a root upon a root, to supply a tree which he required. When a tree has been killed by violence, its branches withered, dead in the estimation of most people, he has grafted from it with success by copulation. Scions thus placed on stocks which have been set out late are facilitated in their union, it succeeds with an herbaceous scion on a ligneous stalk, and can consequently be practised in summer as in the spring.

* I have learned that Mr Van Mons has been ordered to evacuate the whole of the land before the end of February.*

*As the above was written in 1834, the nursery must have been destroyed in 1835.—Translator.

Although the best condition for success is when the stock and scion are of the same diameter, the stock may nevertheless be larger than the scion, or the scion larger than the stock.

EXPLANATION OF THE PLATE.

Fig. 1. An example where the stalk and scion are of the same diameter: each is cut sloping, and the parts applied one on the other as exactly as possible, with the precaution that the interior bark of each coincide in the whole or greater part of their extent. To draw the sap it is advantageous to so cut the scion, as to leave a bud *a*, at the top of the stalk, and another at *b*, at the bottom of the scion; but it succeeds equally well without this precaution, which is not always practicable. When the two parts are adjusted, Mr Van Mons binds them together with bass ligatures, and covers the whole with grafting wax or other composition.

Fig. 2. An example when the stock is larger than the scion.

The scion or graft is cut as in the other case, leaving a bud very near the superior border of the slope of the scion, and they are united, as is seen, figure 3, in such a manner that the interior of the bark of the stock and that of the scion touch and coincide to the greatest possible extent, as it is only between the bark and the wood that the organic union can be effected.

It can easily be perceived in this example, that the large wound *a* of the stalk, will be a long time in healing over, and that the scion is exposed to be displaced by the wind, if put on a tall stock.

Fig. 4. Another example where the stock is larger than the scion. Here there is a modification which Mr Van Mons has not explained; but I suppose that the slope *a* is rather to facilitate the recovery of the wound, than for the reception of the graft, like that of figure 3; the scion *b* will be in a better condition than if placed upon the scaff *a*, although the scion *b*, in consequence of the great diameter of the stock, can only attach itself on one side.

Art. II.—*Leaves from my Note Book.—No. II.*

Mr Fessenden — In my last, I promised a further notice of this city of brotherly love. A long time has elapsed since that promise, but as the subject of a supply of good water in your own "city of the hills," has for a long time been a great desideratum, I shall make some mention here of the *Fairmount Water Works*, deservedly the pride of every citizen of Philadelphia. They are built a short distance from the city proper, on the river Schuylkill. The water is raised to reservoirs on the top of a hill, containing several millions of gallons, and thence distributed by pipes to every part of the city and suburbs. The pumps, of which there are four, for forcing the water to the top of the hill, are contained in a large and strongly constructed building of wood and stone on the banks, and are worked by the force of the current from a dam which extends across the river. They raise about five and a half millions of gallons in twentyfour hours, forty gallons on the wheel which works the pump being sufficient to raise one into the reservoir. Two attempts were made, in 1801 and 1811, to raise the water to the reservoir by steam, but it was found that the expense was too great, and the supply of water altogether inadequate to the demand. The present work was commenced by Mr Cooley, in 1819, but before it was completed, he was cut off by death. They were completed, and the steam engines stopped in October, 1822. The cost of the present works were upwards of four hundred and thirty thousand dollars; the total amount of operations have been about one million four hundred and fortyfour thousand. Two men are found sufficient to attend the works at an expense of four dollars per day, including fuel, light, &c. The cost to the city, being the interest of four hundred and thirtytwo thousand dollars annually, is about twentyfour thousand two hundred and thirty dollars, which only a trifle exceeds that formerly appropriated from the city taxes for the support of the steam works, besides consuming all the water rents of the works. The example of Philadelphia, it is hoped, will soon be followed by your own city, instead of longer suffering its inhabitants to drink the miserable apology for water now raised from their wells, and even these a portion of the year dry. The Water Works are also rendered a place of resort in summer, by being planted with trees, and having many artificial fountains around them. Summer-houses are constructed in various parts, commanding a view of the opposite side of the river and the adjacent

country; a full view of the garden of Mr Pratt is also had from this place, which want of time prevents me from visiting.

The streets of Philadelphia are beautifully regular, and each parallel to its neighbor. Trees line the principal avenues, which render them continually green in summer. I sometimes smile as I pass along the streets of the city, to see how proud people appear to be of their little parlor green-houses. Each fair lady seems trying to rival the other in the taste and beauty of her gay wintry companions; they seem striving to cheat the gay summer and autumn flowers into showing their fine colors in mid winter, and the effect produced is very pleasing to the passer-by. He catches a glimpse of some fair being hovering over her pets, and training each stray leaf with as jealous a care as the amateur in his more extensive but hardly more fascinating greenhouse. It makes us poor bachelors sometimes wish we were some flower, useful or ornamental, that we might catch a particle of that precious care which beauty and purity bestows on the senseless but more beautiful and useful plant. In Baltimore, the city of fair ladies, as they say, I was passing along Charles Street one beautiful day, and had been admiring the floral beauties in the windows of the superb mansions, when I come suddenly on a little gem of a greenhouse at the corner of one of the streets, filled with a great variety of flowers, many in bloom, and all open to the view of the passing eye. The effect was very fine, and I wonder they are not more common in our cities, for the purpose of supplying bouquets to the lovers of Flora's treasures.

But I must bid adieu to this fair city, and begin my journey to the far and beautiful West, the promised land of every discontented or ambitious New-Englander — the El Dorado of him who seeks for more of this world's goods than he can attain in your land of steady habits.

Our route lies through what has been truly called the "garden of Pennsylvania." Rich fields of the spring wheat spread around us on every side. Fruit trees of many kinds find a rich and congenial soil, and the agricultural and horticultural exhibitions of this giant State, equal if not surpass those of any State in the Union. As we progress towards the mountains, the scene every hour increases in interest and beauty. The rich farms, many of them the property of the German emigrant, now become more substantial in the appearance of their buildings than in the more Atlantic States, and the gray stone farmhouses of the inhabitants, many of them encircled by the sycamore

and other trees, speak an air of quiet and rural comfort which the rich denizen of the city might well envy. Stone is the principal material used in their buildings, and the spaciousness and comfort of their barns and outhouses are such as a farmer, who is content with the usual frail and ill-shapen outhouses of a New-Englander might well view with astonishment and admiration.

Many of the towns, also, have an appendage which the eye of a traveller and a lover of quiet beauty and taste often delights to linger upon — I mean the burying-grounds, or rural cemeteries. There are a few in this State which are an honor and an ornament to the towns to which they are attached. A gentleman who joined us from the route through Bethlehem and Harrisburg, gave me a very fine description of a rural cemetery in the beautiful town of Bethlehem, and which, from his glowing description may stand in humble distance with our beautiful and romantic Mount Auburn. Delightful, calm, beautiful Mount Auburn! I love to think, as I pass through these cities of the South, how much we owe to our Horticultural Society, and to the energy, perseverance and classic taste of Dearborn, Cook, Vose, and their associates; I am proud of *our* beautiful Auburn, and as I recount to the traveller the calm and secluded beauty of the place, it seems one link to attach me to "my own, my native land." — "Let me sleep with my fathers," is a beautiful thought, and one which the wanderer often brings to his mind; but it comes with a fourfold beauty and force, when that "sleep" is associated with a spot where nature and art have combined to provide a place where the footstep of the survivor may, with melancholy pleasure, hover round the graves of the departed, and plant and water the rose, the sweet briar, and the flower which he had loved while on earth. There is a feature in the cemetery at Bethlehem, borrowed from the Europeans, which I think might be introduced into the plan of our cemetery. At the entrance of the green lane which leads to the place, is a small stone building called "the Dead House," in which the bodies of the dead are deposited some time previous to their final burial. By leaving the head uncovered, if life by any chance should remain, it has a chance of renewing its energies before the turf closes over it forever. Even in the grave the rigid and cold rules of the Moravians continue — the males are divided from the females by an avenue through the centre of the rows of graves, — a small slab rests on the grave, on which is engraven the name of the departed, the date of his birth and of his death.

I love to linger amid the calm, cold places of the dead, when they are adorned and beautified by the charms which nature, aided and guided by the hand of taste, throws over the consecrated place. To some it may appear a singular and dreary taste, which loves to think of the grave. But if it be a singular taste, it is one which will render the heart purer, and cast a gleam of sunshine over the pathway to a better world. It must gratify the hearts of the liberal men who planned Mount Auburn, to know that its plan is admired and is being followed in many cities of our country; and the time will soon come when every city and large town will boast of its rural cemetery. A modern writer says: "The disposal of the dead is as true a test of civilization in a social community as the social relations of the living. The taste which embellishes life passes with the arts attendant upon it, from one nation to another, like a merchantable commodity; but the sentiment which would veil the dreariness of the grave, and throw a charm even around the sepulchre, that would hide the forbidding features of that formal mound and shelter the ashes beneath it from contumely, — this is a characteristic springing from some peculiar tone of national feeling, and radically distinctive of the community which possesses it."

* * * * *

It was about twilight when we left the beautiful banks of the Susquehanna, and began to wander among the hills which here begin, and continue, till they terminate in the lofty peaks of the Alleghanies. Here begins a change in the face of the country, and in the appearance of the farms and farm-houses. You miss the substantial stone house of the low country farmer, and find the rude hut of him who years ago was considered an emigrant to the "far West" — but now the West has removed toward the Rocky Mountains by some thousands of miles, and even on the distant Arkansas, they tell you with a grave face of the emigrant to the "far West," as the inhabitants of Bangor and thereabouts tell you about the "downeasters."

* * * * *

We are now in the bosom of the Alleghanies, and the scenery around, beneath, above us, is truly beautiful; perhaps I may say sublimely beautiful, for it well deserves that appellation. On one hand lie the mountain tops enveloped in a dense mass of vapor, while ever and anon a peak seems to shoot up from the mass, and stands out proudly and calmly against the clear blue sky of autumn. I sometimes think it is an image of truth emerging from the dark cloud of

error and ignorance in which it has been enveloped, and startling us mortals by its dignity and purity. And then the glorious hues of autumn foliage — height above height, covered with the sere and yellow leaf, while the mountain wind sighs mournfully among the falling and fallen leaves, and seem mourning for the joys and glories of departing summer! Here and there, as you catch a glimpse deep down in the valley, you see a few huts, or rude log cabins inhabited by a race of unambitious and rude people, who earn a scanty livelihood by cultivating the small spaces which lie between the rocks, and hunting over the mountains. They say solitude has charms — if this be solitude, I should say with the good lady who kissed her cow, "every one to their fancy." The five or six horse team of the Pennsylvania wagoner are met with at intervals, while the rude music of their *gee haw*, and the tinkling of their bells echoing among the hills, lend an air of romance to the scene; and the loud and shrill echo of the swine drivers, as they urge their dull charge over the hills, and the gay colors of their apparel, all give their aid in cheating the long way of its tiresomeness.

* * * * *

We are at length safely housed in the Exchange at Pittsburg, — a most delectable view of coal smoke from our window. All things seem covered by a dark dingy coat of the color of the chimney-sweep. The urchins you meet in the streets of the town have nearly all smutty faces, and even the ladies seem to have a tinge of the same dull smoky hue. I stepped into a church on the Sabbath, yesterday, and everything seemed to correspond with the aspect without, — even the sermon had a tinge of the color they say the gentleman of the lower regions wears. They say in Hingham, every man makes buckets to sell but the parson, and he makes his own. So here, I *reckon* every one deals in coal but the minister, and he digs his own—for coal can be had here for but little more than the trouble of digging for it in the mountains, which rise dark and gloomy on the other side of the river.

Pittsburg is a place of great business, and its fine situation at the head of navigation on the Ohio, together with the enterprise of its inhabitants, and its natural resources, have caused it to become a place of the first importance this side the Alleghanies. The immense and inexhaustible mines of bituminous coal, its great timber trade, glass-works, and iron manufactories, enable it to maintain a lucrative trade with every part of the Western world, and to a great extent also in

the East. Its growth has been rapid, and no town can more justly boast of wealth derived from small beginnings. Only a little more than seventy years since, the future "father of his country," a young man of twentytwo, was wrecked on a small island near the present city of Pittsburg, on his return from Le Bœuf, whither he had been despatched by Governor Dinwiddie. In the year 1754, and '55 it became celebrated by the bloody annals of Du Quesne, and a short distance from the city is the field where Britain's bravest and most gallant sons fell a sacrifice to the fool-hardy valor of Braddock, who atoned for his recklessness with his life. The field has long since been cleared, and the quiet labors of agriculture are now pursued in peace where the war whoop of the savage echoed on that bloody day amid the leafy forest. And ever and anon as the hardy husbandman turns up with his plough some relic of the battle, a rusty knife, a hatchet or a tomahawk, he may turn to his children and tell them of all the horrors that took place on that spot in the early days of our now happy and glorious country. There are a few stately oaks still standing on the field, and the inhabitants tell you that occasionally the dusky form of the savage may be seen gliding beneath their shadows in the calm moonlight!

Although occupying a fine situation, the town presents nothing of beauty to interest the traveller, owing to the manner in which it is laid out, the absence of public promenades, trees, &c. They have a supply of pure water, a great desideratum in my humble opinion, by means of a large open basin on Grant's hill, (so named from the defeat of that brave officer, at its base, in the French war,) which is supplied by a steam engine from the Alleghany river. It is thence conducted over the city by means of pipes.

A lovely morning dawned upon us as we left Pittsburg. Our course now lies between the beautiful banks of "La belle rivière," and among islands which seem ever green and verdant. We passed Economy, settled by Rapp, so justly celebrated for its strict adherence to what has truly been called Heaven's first law, — for its order and regularity are the most prominent and beautiful features of the place, — and their consequence are shown in fine orchards, flourishing vineyards, neat buildings and spacious streets. The town has been formed on the principle of owning all the property as a corporation — a new edition of the apostolic era, a community of goods. The main features along the Ohio, aside from the beauties of nature, are the flourishing and prosperous state of the so recently formed

towns, some of them as it were of the growth of yesterday. The windings of the river afford some of the most splendid views to be found in any part of our varied country — but when you have seen a few miles of its fine scenery, you have seen about all the variety the river affords till you get beyond Cincinnati. It is a continued succession of "bluff" and "bottom," with here and there something strange or interesting to attract the eye.

But I have already extended my letter to too great a length. If I am duller than travellers usually are, you must lay a part of it to the fact, that I cannot roam so far on the wings of fancy and description as they, being restrained by the particular character of your Journal. My next will date from the sunny South.

L'Ami.

Art. III.—*A few Remarks upon the Effect of the Winter on various Plants.* Communicated by Mr Joseph Breck.

To those who are destitute of a green-house, and of course confined to the cultivation of hardy plants alone, every new species that proves hardy, will be considered a valuable acquisition to the ornamental department, The winter past, though one of the most severe we have ever felt, has, notwithstanding, been favorable for the preservation of many plants, that in less severe seasons, with less snow would have perished. Before we had an opportunity to protect some of the more tender plants, as is our usual custom, the first snow storm took us by su rprise somewhere about the 20th of November, and contrary to the expectations of all, remained until the first of April.

We have had then, an alpine winter, the snows of which have afforded the best protection possible for tender plants.

The beautiful family of *Mimulus* have all survived and are in fine condition. The soil in which they have been kept is very wet; the only proper situation for them; for in dry soils they are good for nothing. The varieties or species are *M. roseus, rivularis, variegatus, smithii, guttatus* and *luteus.* We had the seeds of these direct from England last year, but they were mixed, or the flowers sported in such a manner that we could not distinguish the peculiariries of all the different sorts.

Our best Carnations we kept in frames, but those left in the borders

have stood the winter admirably. Pinks have never looked better than they do this spring.

Pensttemon diffusus appears to be perfectly hardy. *P. pulchella* has also survived, but somewhat injured. *P. atropurpurea* in low, wet ground has completely failed: on higher ground it has done better. This with *pulchella* should be protected in a frame, when they are easily preserved.

Cantua coronopifolia or *Ipomosis elegans* is very subject to damp off, and difficult to keep through the winter. Much protection is sure to kill the plants. It has generally been considered a tender plant and treated as such. Having many fine plants, we distributed them in various exposures, in hopes to save some. We are happy to state that about half of the whole number are in fine condition. The driest soil in the shade of a fence seems to be the most favorable situation for them: if the ground is inclining to moisture, there is but little chance for them: so fine a plant as the *Cantua* deserves a place in every garden. We would recommend for experiment to sow the seed in August, as perhaps, the small plants would endure the winter better than large ones.

Salpiglossis picta flourished finely with us last season and seeded abundantly; before winter set in, we found young plants, around the old ones which were taken up placed in pots, and kept in fine order in the frame.

Eschscoltzia Californica has kept very well generally; the winter before we lost all our plants; the driest soil is the best in which to preserve them.

Our *Lobelias* we thought most safe in the frame, where they are very easily kept, or even in a cellar.

Plants of *L. fulgens* and *syphilitica* have stood out, but the former somewhat injured. *L. cardinalis* does the best also when sheltered.

Chelone barbata in wet ground is injured, but in dry, in good order. *Polemonium Mexicana* has proved hardy. *Stenactis speciosa*, a new perennial, the seeds of which we received last season, is very hardy: not having seen any description of it we cannot tell whether it will be a valuable acquisition to the flower garden or not; from its specific name we should suppose it to be showy.

Spartium scoparium. Scotch Broom. This beautiful shrub has been very much injnred where not covered with snow. Prostrate plants are in perfect order, and will undoubtedly produce an abundance of their brilliant flowers. The only method by which we may

hope to secure this shrub in our vigorous climate, is to keep the plants prostrate, by pruning out the central branches and training the lateral ones in a horizontal position, in this state they are easily protected by a mat which may be pinned down to the ground at the corners.

Rhododendron ponticum is also in good order where it was covered by snow, but those branches exposed appear to be killed.

Our location is very bad for acclimatising half hardy plants; being situated on a river in the centre of a spacious valley surrounded by hills. In still cold weather the thermometor falls 10 or 12 degrees lower than it does on the neighboring hills. We have taken a piece of ground upon one of these hills for experiment's sake and find it a much more secure place for tender shrubs than the valley. The *Ailanthus* on the hills have not been in the least injured, which in the valley they have been killed nearly to the ground. The same is true of the *Chinese Mulberry*. As for *Altheas*, particularly the double varieties, we have given them up entirely, as they are killed by the winter with, or without protection: the single varieties are more hardy, and will stand without much trouble any where. *Dahlias* were cut down by frost three weeks sooner, last autumn, in the valley than they were on the hills. *Rhododendrons* and many other fine shrubs are considered hardy in England, which in this climate, require the protection of the green-house. We think that many of them may become acclimatized, by planting them on high ground and carefully protecting them with mats. How desirable it is, that this subject should be more attended too; especially by those who can afford to loose a few plants by the experiment. We know of one gentleman who is giving his attention to it, and we hope many others will follow his example.

Lancaster, April 26.

Art. IV.—*A Dream.*

Sir—I know no two things more opposed to each other than dreaming and horticulture, and I scarcely know how to offer it for admission into a periodical devoted to that subject — nevertheless, here it is, peradventure it may meet acceptance.

On the 30th of last April, I arrived at home pretty well fatigued

with my day's occupation, and sinking into an easy chair, took up the Transcript. After reading the news, &c. I listlessly turned to the advertisements, and was astonished at finding one from my intimate friend M., nearly as follows:

"Mr M. informs the young Misses and Masters who usually go out Maying, that on Monday, the 2d of May, if the weather is favorable, his garden will be opened to all neatly dressed and well disposed children, where they may gather flowers in moderation, and enjoy themselves until 8 o'clock."

I know not how it was, but I appeared to be standing at my friend's gate, the golden sun just bursting into the clearest atmosphere I ever witnessed. Already a few groups of lively rosy faces showed themselves at the end of the avenue. I walked at once into the garden, and was utterly surprised at seeing three long rows of daffodils in full splendor; on turning round a corner, I came in view of a swelling slope fronting the South, covered with myriads of the white, red and blue hepatica, such as may be seen wild at Mount Auburn; proceeding onwards, I was struck with seven or eight beds alternate violets in full fragrance, and the snowy Sanguinaria canadensis, which are found in abundance near Fresh Pond, but whose lazy petals, like the eyelids of many, will not open until the sun is high. Near a small artificial swamp, were two or three patches of the yellow dog's tooth violet, whose beautifully brown mottled leaves and elegant nodding flowers, are sure to attract admiration; and the surrounding rocks were covered with that first little harbinger of spring, the vernal saxifrage, — these, and a few snowdrops and crocuses were nearly all I can now remember. Just as I had turned to admire the exquisite blue of the periwinkle, which covered another large portion of the garden, I was overtaken by my worthy friend, whose countenance was radiant with that expression of quiet delight which we only remember observing in dreams. After a slight apology for having omitted inviting me to his breakfast party, he explained to me the plan of the entertainment, and assigned to me, as one of his guests, a portion of the duty of watching that the happy little ramblers did not overstep the bounds of moderation in the bouquets that each was permitted to gather. This duty never became irksome — the children seemed full of joy and delight, many of them in innocent prattle anticipating the pleasure their friends and parents would feel at receiving these little tributes of the coming spring. For myself, I was absorbed in the reflection of how much happiness may be diffused around by

one good and active heart, when the tinkling of a small bell announced that the presence of all, including the children, was desired on the lawn in front of the house. Here we found a well covered breakfast table for twenty persons, and about two hundred and fifty good slices of bread and butter with mugs containing half a pint of milk each, laid out on the grass for such of the children as might be inclined to eat. Each person's plate on the breakfast table was covered by an elegant bouquet of exotic flowers, the contributions of my friend's and the neigboring green-houses. All being assembled, a worthy minister poured forth a devout aspiration of praise and thanksgiving to the bounteous giver of all good, and invoked His blessing on the present assembly. Six of our host's vocal friends then commenced singing that beautiful piece —

" Hail smiling morn, that tips the hills with gold,
Whose rosy fingers ope the gates of day, Hail ! hail ! hail ! •
Who the gay face of Nature doth unfold,
At whose bright presence darkness flies away, Hail ! hail ! hail !"

Never did music appear to me more divine. After an excellent breakfast which appeared, more than any meal I had ever partaken, to be truly the " feast of reason and the flow of soul," we rose and perambulated the green-houses, listening with pleasure to my friend's history of the uses and cultivation of one plant after another ; when suddenly the burst of three hurrahs from the young visitors who were about to leave, made me start — and, unwelcome reality ! — I found myself seated on my easy chair, having, by an unlucky motion of my foot thrown down poker, shovel, tongs and bellows ; and burst the chain of dreaming fancy, in which I had been thus delightfully spellbound.

Mr Editor — the cherub faces of these children have haunted me ever since to such a degree, that I have determined on breaking the vow of celibacy I had made, and have resolved to get married forthwith, if I can find any fair damsel who will have compassion on a repenting bachelor. Yours, truly, JUVENIS.

ART. V.—*Extracts from German Periodicals.*

SIR — I have always thought that borrowed sense was more profitable to read than original nonsense, and particularly where it is seasoned with the relish of novelty. Under this impression I am

about to offer for insertion in your Register extracts from some periodical works published in 1835 in Germany, which in all probability will be new to most of your readers.

Having received rather a large quantity of these sheets, a great portion of which is devoted to pure botany, my purpose is to wade through them by degrees, and to select such information as appears to me either useful or amusing to the horticulturist in this quarter of the globe.

No one will deny to the Germans the character of unwearied assiduity, and the extreme of perseverance in their various pursuits; consequently their learned and scientific men, their natural historians have always ranked high in Europe; much of the information I shall offer has been elicited at associations of such men, and, therefore, is to be considered of some weight. I need only mention the names of Dr Von Martius, Dr Mohl, and Professor Nees Von Esenbeck, to insure assent to this assertion.

At one of their meetings, Count Sternberg offered some information on the sprouting and growth of grains of wheat which had been found in the cases of Egyptian mummies. The first attempt to vivify the wheat by previous immersion in weak acid failed, owing, as it appeared, to great age having rendered the outside skin of the grain so tender, that the flowery portion of the seed soon liquified, and water alone produced the same effect. The next trial was made by dipping the grains into oil, and then planting them pretty deep in garden pots placed in a saucer partly filled with water; this was successful, and two plants were produced, one of which was placed in the open ground, the other received the protection of the greenhouse. Of course much curiosity was excited on the question of the species of wheat common in those early periods. The plant exposed in the open air was much injured by frost and hail, but late in the season produced a few ripe ears. That in the greenhouse flourished and produced several heads which underwent minute examination, and proved to be what is now called *Talavera Wheat;* its botanical character is *Triticum vulgare—spica laxa, mutica, alba, glabra.* It was incidentally mentioned that grains of Indian corn had been found in the tombs of some of the Incas of Peru, which had been brought to vegetate.

The conversation subsequently took a very interesting turn on the subject of the powers of vegetation of seeds, particularly of the grasses gathered in an unripe state. Dr Kurr of Stuttgardt, stated that he

had succeeded in sprouting seeds of wheat gathered immediately after the blossom was over.

Professor Mohl repeated the observation of De Candolle, that in these cases vegetation took place quicker, as the process of the return of the floury part of the seed into a saccharine state was thereby rendered unnecessary. To understand this observation, it is perhaps necessary to state, that previous to ripening, the seeds of most grasses are milky and sweetish; the act of ripening changes this milk into a farinaceous or floury substance, destitute of sweetness but fit for food. Just before the seeds which are committed to the earth, sprout, this farinaceous substance again becomes sweet, and it is probable that this saccharine juice is the first food of the young shoots. The operation of making malt for the brewer, is the action of producing this last change — the barley is soaked until it just sprouts, the farther vegetation is then stopped by a drying heat, the floury part of the grain becomes saccharine, and when steeped in hot water produces a sweet liquor which ferments and is beer.

It was remarked, that in the south of Europe, wheat was often cut when green, and yet gave excellent seed; and that the French were right in reproaching the German agriculturist for harvesting too late. Professor Kunze had succeeded in vegetating seeds of *Convolvulus nil* sown in an unripe state. Dr Von Martius mentioned that in the Brazils they only sowed unripe seeds of Mungava (Willoughbeia speciosa), maintaining that the fruit of such seeds was much better, less slimy and mucilaginous than that from plants produced by ripe seed.

Professor Raum laid before one of the meetings the result of his studies and experiments, on a peculiar action of the earth on the roots of plants, which he is inclined to refer to a species of galvanic influence. He, as well as others, found that seed was never produced in terrestrial plants grown wholly in water; he therefore instituted several experiments, by growing plants in various substances; the most favorable results appeared to him to arise from burnt clay. He also remarked the obstinacy with which the roots of many plants will cling to rocks and stones; and that cuttings will more easily strike root, if stones or broken garden pots are placed in contact with them. He has even found that unhealthy trees may be recovered by laying stones around the roots. Two plants of equal growth were tried, — that under which was placed broken tile, grew more luxuriantly; the soil of Basaltic regions, he observes, produces some of the finest plants, this rock having undergone the action of fire. Plants grow better

with stone — that is, broken stones — or earths of two different sorts than with one alone; thus bog earth is better when mixed with sand. But the most fruitful earth he conceives to be that which contains a mixture of alumine, silex and lime. His conclusion is, that independent of the action of light, heat and moisture on plants, there is a peculiar one of the earth somewhat related to galvanism. He calls this *Irdwirkung*, literally, earth action.

Connected with this subject, the following observations occur to me. In potting off greenhouse plants the roots are always most numerous and matted together in contact with the sides of the garden pot, which, of course, is manufactured of burnt clay. Now it is well known that the roots of plants will instinctively find out the places best adapted for them; and it appears in this case that they leave the earth with which the pot is filled, and which would seem to be most congenial to them, and choose the baked pottery which is apparently without any nutritious juices whatever.

In Loudon's Gardener's Magazine for November, 1835, there is a new method of striking cuttings, as follows. Take a large garden pot, fill it about an inch deep with broken bits of pottery, then take a small pot, stop the hole at the bottom and place it inside the larger one, so that the rims of both may be on a level, fill the space between the two with sand or other propagating soil, keep the small pot filled with water; then insert the cuttings in an oblique direction, so that the end of the cutting underneath the soil may touch the outside of the smaller pot; place the whole under a hand-glass in a shady spot, and scarcely a cutting will fail. This is evidently an application and confirmation of the foregoing ideas, although it is doubtful whether Mr Alexander Forsyth, the ingenious communicator of this method to Loudon, had ever heard of Professor Raum's experiments.

Dr Gartner laid before the assembly an exposition of his experiments carried on for several years on the interesting subject of hybridizing plants. The only novelty I observed was that the pollen loses its virtue in fifteen minutes after leaving the anther, and that a good test of the relationship between plants of the same species, is the facility with which seeds are produced under this operation; he instanced the pink family *Dianthus*, thus,

If Dianthus *barbatus* fertilized by the pollen of the same would produce	1000 seeds,
Fertilized by D. superbus, it only produced	711
D. japonicus,	666

D. armeria,	533
D. chinensis,	260
At length with D. prolifer, he could only produce	20

He also remarked, as his experience, that hybrids in general lasted through about six generations, at each remove less fruitful in seed, and at length they became entirely lost.

This subject of hybridizing is well worthy attention and experiment, as by this operation we not only raise new and beautiful varieties of flowers, but also all the valuable varieties of fruits, and many improved vegetables.

One other extract will suffice for this number; it is on the same subject; being the experience of Mr Von Berg, of Nuenkirchen, on the production of varieties of the Iris from seed.

From a handful of seed taken from Iris cœsia, he obtained one plant of Iris matthioli (*Tausch*), and of Iris florentina.

From seed of Iris repanda, he obtained Iris japonica. From Iris tardiflora, Iris squalens, and so on with about a dozen varieties. He enters into minute detail of the distinguishing marks of each, which are extremely interesting to the real amateur of this beautiful and showy family of plants. Certainly if these experiments are successfully pursued by others, the results will rather shake the existing faith in the distinctness of varieties.

The valuable recent publication of Drs Wight and Arnott, on the plants of India, has already made a slight inroad on this faith, by classing together, under the same name, several plants which have hitherto been considered as different varieties. Much has yet to be expected during the pursuit of this fascinating study.

Yours, truly,

J. E. TESCHEMACHER.

ART. VI.—*Gardeners' Work for June.*

MELONS, cucumbers, &c., which have been protected by glasses, may now be exposed to the open air. It has been recommended to place a piece of shingle, a bit of slate or of board under each fruit of the early melon to preserve them from the dampness of the earth, which would otherwise injure their flavor. If the season be dry, your vegetables, and particularly your cucumbers, will need water. Keep

your crops clean by hoeing and hand weeding. Sow cucumbers for pickling about the last of this month. Thin water melons, squashes, and pumpkins, leaving but three plants in a hill. Attend to cabbage, cauliflower, bean plants, &c., and if possible prevent their destruction by the cut worm. "If you perceive any plants injured, open the earth at the foot of the plants and you will never fail to find the worm at the root within four inches. Kill him, and you will save not only the other plants in your garden, but probably many thousands in future years." Hoe and bush your late peas; plant succession crops of potatoes, kidney beans, peas, small salads, &c. "Thin out and earth up all your plants; remember that frequent hoeing is both rain and manure to your vegetables in dry weather." Plant celery in trenches. Inspect grafted trees, and ascertain whether the scion has united with the stock. Take off the clay and loosen the bandages of such grafts as have succeeded; and rub off all superfluous, irregular or ill placed shoots or suckers.

Art. VII.—*Van Mons' Theory.*

We consider the account of this theory contained in the first thirtytwo pages of the present No., as the most valuable paper which the annals of modern horticulture have ever presented to practical and scientific cultivators of fruit. Good fruit is not only an innocent luxury, but the most wholesome aliment which Providence has ever conferred as a reward to the enlightened industry of the more civilized portion of the human race. Mr Van Mons, by pointing out a sure method of obtaining the best varieties of such an important article of human sustenance, will be ranked among the greatest benefactors of mankind that ever existed; and Mr Poiteau, and our excellent Translator should share with the inventor and discoverer of the new art of more than fourfolding the value of the products of our orchards and fruit gardens. We want words to express our obligations to these gentlemen, whose only adequate reward will be found in the thankfulness and gratitude of the countless thousands who will be benefitted by their economical and scientific researches and exertions.